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NOTE ON THE VISIBLE SPECTRUM OF THE GREAT NEBULA OF ORION.

By W. W. Campbell.

It has heretofore been considered that the visible spectrum of the *Great Nebula of Orion* is fundamentally the same for all parts of the nebula. My observations lead to a very different conclusion, for I find that the relative intensities of the three lines at wave-lengths 5007, 4959 and 4862, which constitute nearly the whole of the visible spectrum, vary within wide limits as the slit of the spectroscope is moved over the different parts of the nebula. The brightest part of the nebula is that in the vicinity of the *Trapezium*, for which the spectral lines have, approximately, the relative brightness 4:1:1. But many of the regions of medium brightness give a spectrum in which the first and third lines are about equally intense; while for many of the faint portions on the south and west borders of the nebula the third line is brighter than the first. The isolated portion northeast of the *Trapezium* surrounding the star *Bond*, No. 734, yields a spectrum in which the third line is at least five times as intense as the first. It happens in many regions that of two adjacent parts in the slit at the same time, the first line is stronger than the third for one part, and the third is stronger than the first for the other part.

The ratio of the intensities of the first and second lines appears to remain practically constant at 4:1. The second line is much fainter than the third in nearly all parts of the nebula.

In general the hydrogen line $H\beta$ (4862) is relatively very strong in the faint outlying regions. It is relatively stronger even in the bright region around the *Trapezium* than in any other nebula I have examined, except possibly the planetary nebula SD. $-$ 12° 1172.

October, 1893.